

## CLAIMS

1. A nanoparticle, which particle encapsulates a fluorescent material.
- 5 2. A nanoparticle according to claim 1 characterised in that the nanoparticle is derived from a sol gel.
3. A nanoparticle according to claim 1 characterised in that the nanoparticle is intrinsically fluorescent.
- 10 4. A nanoparticle according to claim 1 characterised in that the nanoparticle entraps a protein conjugate of a reporter molecule.
5. A nanoparticle according to claim 3 characterised in that the reporter  
15 molecule is covalently attached to a macromolecule.
6. A nanoparticle according to claim 3 characterised in that the nanoparticle is derived from cadmium sulphide and cadmium selenide optionally doped with rare earth atoms.
- 20 7. A nanoparticle according to claim 6 characterised in that the rare earth atom is a europium III salt.
8. A nanoparticle according to claim 1 characterised in that the nanoparticle is  
25 substantially spherical and has a diameter of from 30 to 500 nm.
9. A nanoparticle according to claim 1 characterised in that the nanoparticle comprises a fluorescent dye based on entrapment of a protein-dye conjugate or a DNA-dye conjugate within the nanoparticle.

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10. A nanoparticle according to claim 9 characterised in that the dye is selected from Texas Red-labelled gelatin, porcine thyroglobulin, and fluorescein-labelled bovine serum albumin or gelatin.
- 5 11. A nanoparticle according to claim 1 characterised in that the surfaces of the particles are modified to enable them to be provided with a surface coating.
12. A nanoparticle according to claim 11 characterised in that the particles are capable of being modified by passive adsorption or via covalent attachment to coat  
10 their surfaces with hydrophobic molecules.
13. A nanoparticle according to claim 12 characterised in that the hydrophobic molecules are selected from phosphatidylcholine and phosphatidylethanolamine.
- 15 14. A nanoparticle according to claim 2 characterised in that the Sol gel-derived nanoparticles comprise a Texas Red-porcine thyroglobulin conjugate embedded within them.
15. A nanoparticle according to claim 1 characterised in that the particles  
20 comprise a high fluorescence intensity.
16. A nanoparticle according to claim 1 characterised in that the surface coating is lipophilic.
- 25 17. A nanoparticle according to claim 1 characterised in that the particle is adapted to bind to a sebum-derived component.
18. A nanoparticle according to claim 17 characterised in that the sebum derived component is selected from the group comprising waxes, cholesterol and squalene.  
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19. A nanoparticle according to claim 16 characterised in that the lipophilic coating is selected from phosphatidylcholine and phosphatidylethanolamine.

20. A nanoparticle according to claim 11 characterised in that the coating is passively adsorbed directly onto a sol gel particle.
- 5 21. A nanoparticle according to claim 1 characterised in that the particles are formed from TEMOS (tetramethyloxysilane).
22. A nanoparticle according to claim 21 characterised in that the particles comprise aminopropylloxysilane-derived sol gels.
- 10 23. A nanoparticle according to claim 22 characterised in that the preparation of the particles included a glutaraldehyde treatment.
24. A nanoparticle according to claim 23 characterised in that the glutaraldehyde  
15 treatment was followed by cyanoborohydride reduction.
25. A nanoparticle according to claim 24 characterised in that the cyanoborohydride reduction was followed by an ethanolamine wash.
- 20 26. A nanoparticle according to claim 1 characterised in that the particles are uncoated nanoparticles and carry either a net negative or a net positive charge.
27. A nanoparticle according to claim 1 characterised in that the particles are provided with a hydrophilic coating.
- 25 28. A nanoparticle according to claim 27 characterised in that the coating carries either a net negative or a net positive charge.
- 30 29. A nanoparticle according to claim 27 characterised in that the hydrophilic coating comprises polylysine.

30. A method of detecting prints (e.g. fingerprints) which comprises the use of a nanoparticle according to claim 1.

31. A method according to claim 30 which comprises determining details of fingerprint substructures.

32. A method according to claim 1 characterised in that the scanning was performed at an excitation wavelength of 595 nm

33. A nanoparticle or a method substantially as described with reference to the accompanying examples.

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